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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,343	12/05/2003	David H. Shen		1136
7590	03/22/2006		EXAMINER	
DAVID H. SHEN IRF Semiconductor, Inc. 6 RESULTS WAY CUPERTINO, CA 95014			VO, NGUYEN THANH	
			ART UNIT	PAPER NUMBER
			2618	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/729,343	SHEN, DAVID H.
	Examiner	Art Unit
	Nguyen T. Vo	2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) Claim(s) ____ is/are allowed.

6) Claim(s) 1-112 is/are rejected.

7) Claim(s) ____ is/are objected to.

8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 05 December 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. ____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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DETAILED ACTION

Drawings

1. Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, the claim is indefinite because the preamble of the claim calls for a method claim, while the body of the claim has a structure of an apparatus claim. In order to overcome this rejection, it is suggested that the recitation "A method for a highly integrated radio receiver design comprising of" at lines 1-2 should be changed to --A highly integrated radio receiver comprising--. In addition, the recitation "the intermediate frequency" at line 9 lacks clear antecedent basis because there is no "intermediate

frequency" being introduced before. In order to overcome this rejection, it is suggested that the recitation "the intermediate frequency" at line 9 should be changed to --an intermediate frequency--.

As to claims 2-12, the recitation "The method" should be changed to --The receiver--.

As to claim 4, the recitation "the polyphase filter stage" at line 1 lacks clear antecedent basis because there is no "polyphase filter stage" being introduced before. In order to overcome this rejection, it is suggested that the recitation "the polyphase filter stage" at line 1 should be changed to --the polyphase filter--.

As to claim 12, the recitation "any integrated circuit technology" renders the claim indefinite because it is not clear as to what are being claimed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Margairaz (6,985,710, cited by examiner).

As to claim 1, Margairaz discloses a highly integrated radio receiver (see column 6 lines 48-52) comprising an in-phase mixer 52a (see figure 6) with one input connected

to an RF input signal 51, and another input connected to a local oscillator signal (see the LO 54 in figure 6), a quadrature mixer 52b with one input connected to said RF input signal 51, and another input connected to a 90 degree phase shifted local oscillator signal (see the 90 degree phase shifter 53), a polyphase image-reject filter 60 with the ability to be tuned to track the intermediate frequency (see column 7 lines 12-14), the input of said polyphase image-reject filter connected to the outputs of said mixers (see figure 6), a tuning circuit with a reference frequency input and whose output is used to control the tuning of said polyphase image-reject filter (see column 7 lines 12-14, lines 34-67). Margairaz thus discloses all the claimed limitations.

As to claim 3, Margairaz further discloses an IF amplifier 59.

As to claim 12, Margairaz does disclose that the receiver is implemented in an integrated circuit technology (see column 6 lines 48-52).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Margairaz in view of Song (6,850,748, cited by examiner).

As to claim 2, Margairaz does disclose a second mixer 62 (see figure 6), but fails to disclose dividing down the first local oscillator signal as claimed. Song discloses dividing down a local oscillator signal to obtain a second local oscillator signal (see the

divider 411 in figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Song to Margairaz, in order to reduce the number of local oscillators needed in the receiver (as suggested by Song).

8. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Margairaz in view of Stikvoort (6,236,847, cited by examiner).

As to claim 4, Margairaz fails to disclose that the polyphase filter 60 is followed by another polyphase filter as claimed. Stikvoort discloses a polyphase filter 16 being followed by another polyphase filter 19 (see figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Stikvoort to Margairaz, in order to enable the realization of receivers having a narrow IF bandwidth without requiring expensive band-pass filter (as suggested by Stikvoort at column 2 lines 48-52).

As to claim 6, Margairaz fails to disclose that the polyphase filter 60 is preceded by an IF amplifier as claimed. Stikvoort discloses a polyphase filter 16 being preceded by an IF amplifier 12 (see figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Stikvoort to Margairaz, in order to improve signal quality of the received signal by amplifying it to a desired level (as suggested by Stikvoort at column 3 lines 17-32).

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Margairaz in view of Moloudi (6,917,789, cited by examiner).

As to claim 5, Margairaz fails to disclose that the polyphase filter 60 is preceded by a buffer as claimed. Moloudi discloses a polyphase filter 892 being preceded by a buffer 888 (see figure 37(b)). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Moloudi to Margairaz, in order to provide sufficient drive for the polyphase filter 60 (as suggested by Moloudi at column 38 lines 15-20).

10. Claims 7-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Margairaz.

As to claims 7-10, Margairaz fails to disclose various configurations of the polyphase filter 60 as claimed. The examiner, however, takes Official Notice that such polyphase filters are known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Margairaz as claimed, in order to provide flexibility in designing and implementing the polyphase filter 60.

As to claim 11, Margairaz does disclose that the receiver is implemented in an integrated circuit technology (see column 6 lines 48-52), but fails to expressly disclose that the integrated circuit technology is CMOS technology. The examiner, however, takes Official Notice that such a CMOS technology is known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Margairaz as claimed, in order to reduce implementing cost.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stikvoort (US 2004/0125240); Davie (6,278,870); Liu (US 2004/0240596); Marshall (4,696,055) all disclose receivers with polyphase filters.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T. Vo whose telephone number is (571) 272-7901. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nguyen Vo

Nguyen Vo
3-15-2006

NGUYEN T. VO
PRIMARY EXAMINER